

REMARKS

In the previous Office Action, the Examiner rejected claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over United States Patent Application Publication No. 2004/0169213 (Farrar) and further rejected claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,334,249 (Hsu '249). In Applicant's response to that Office Action, the independent claims were amended to further distinguish the claimed invention from that which is disclosed in the cited references.

Claim 2 depends from claim 1, and claims 4 and 5 depend from claim 3. Claims 1 and 3 have been amended to further distinguish the claimed invention from that which is disclosed in the cited references. Specifically, claims 1 and 3 have been amended to specifically claim that the interconnect liner layer of aluminum-0.5% copper alloy is deposited along the sides of a trench and via, and that the copper is polished level with the interconnect liner layer.

Compared to claims 1 and 3, Farrar does not disclose depositing an interconnect liner layer of aluminum-0.5% copper alloy along the sides of a trench and via. In contrast, Farrar discloses depositing a layer of aluminum, then a layer of copper, and then another layer of aluminum, all at the bottom of a trench (see paragraph [0044], lines 8-20; see also see paragraph [0046], the third line from the bottom (referring to layer 216 as an "aluminum copper sandwich")). Also, compared to Claims 1 and 3, Farrar does not disclose depositing copper onto an interconnect liner layer of aluminum-0.5% copper alloy. Instead, Farrar provides a layer 221 (unidentified in the specification) which is between the aluminum/copper/aluminum sandwich 216 (see Figs. 2E and 2F) and a metal layer 220.

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The embodiment shown in Fig. 3F of Farrar also does not render obvious the invention claimed in claims 1 and 3. The embodiment shown in Fig. 3F provides a layer of tantalum nitride 314, a layer of aluminum, copper, silver or gold 316 (see paragraph [0058], lines 3-7), and an optional layer of aluminum 321 (see paragraph [0058], line 23). Farrar does not disclose, in connection with the embodiment shown in Fig. 3F, depositing an interconnect liner layer of aluminum-0.5% copper alloy along the sides of a trench and via, and depositing copper onto an interconnect liner layer of aluminum-0.5% copper alloy.

Compared to claims 1 and 3, Hsu '249 does not disclose, among other things, depositing an interconnect liner layer of aluminum-0.5% copper alloy along the sides of a trench and along the sides of a via, and after depositing copper onto this layer, polishing the copper layer level with the interconnect liner layer.

As such, Applicant respectfully submits that claims 1 and 3 are allowable over the cited references, and those claims which depend therefrom, including claims 2, 4 and 5, are also allowable for at least the same reasons.

Claim 7 depends from claim 6, and claim 6 has also been amended to further distinguish the claimed invention from that which is disclosed in the cited references. Compared to claim 6, as amended, Farrar does not specifically claim an interconnect liner layer of aluminum-0.5% copper alloy which is between and in contact with two copper deposits. Instead, Farrar discloses aluminum/copper/aluminum sandwich 216 which is between a zirconium layer 214 and an unknown layer 221.

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Compared to claim 6, Hsu '249 does not disclose, among other things, a copper deposit which is disposed between two surfaces of an interconnect liner layer of aluminum-0.5% copper alloy; and that the copper deposit is polished level with the interconnect liner layer. As such, Applicant respectfully submits that claim 6 is allowable over the cited references, and that those claims which depend therefrom, including claim 7, are also allowable for at least the same reasons.

In view of the above amendments and remarks, Applicant respectfully submits that the claims are allowable over the prior art of record, and respectfully requests that the application be passed to issuance.

Because each of the independent claims, i.e., claims 1, 3 and 6, are patentable over the references cited by the Examiner, Applicant submits that those claims which depend therefrom, i.e., claims 2, 4, 5 and 7, are also patentable over the prior art for at least the same reasons. Applicant therefore respectfully requests that this application be passed to issuance.

Should the present claims not be deemed adequate to effectively define the patentable subject matter, the Examiner is respectfully urged to call the undersigned attorney of record to discuss the claims in an effort to reach an agreement toward allowance of the present application.

Respectfully submitted,

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